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PATENT

Docket No.: 018158-018610US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Lawrence W. Stark et al.

Application No.: 10/006,992

Filed: December 6, 2001

For: DIRECT WAVEFRONT-BASED CORNEAL ABLATION TREATMENT PROGRAM

Technology Center: 3700

Confirmation No.: 1090

Examiner: David M. Shay

Art Unit: 3735

SUPPLEMENTAL REPLY BRIEF UNDER 37 CFR §41.41

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is Appellants' Supplemental Reply Brief in response to the Examiner's Supplemental Answer mailed on July 10, 2007.

STATUS OF CLAIMS

Claims 1-17 and 21-35 are canceled. Claims 18-20 and 36-42 are pending, and stand rejected. Claims 43 and 44 are withdrawn. Claims 18-20 and 36-42 are appealed. All pending claims are presented in **Appendix A**.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 18-20 and 36-42 are directed to non-statutory subject matter under 35 U.S.C. §101.

B. Whether claims 18-20 and 36-42 are obvious under 35 U.S.C. §103(a) over U.S. Patent No. 6,563,105 to Seibel et al. ["Seibel"] in combination with U.S. Patent No. 6,280,435 to Odrich et al. ["Odrich"] and U.S. Patent No. 6,486,943 to Burns et al. ["Burns"].

REMARKS

The Supplemental Examiner's Answer mailed July 10, 2007 is the same as the original Examiner's Answer mailed February 9, 2007. In the original Examiner's Answer, however, the Conferee signatures were omitted. The Supplemental Examiner's Answer corrects the omission. Hence, it does not appear that a substantive response is warranted. Under these circumstances, Applicants have nothing further to add in response to the Examiner's Supplemental Answer, beyond what is submitted in the original Reply Brief.

CLAIMS APPENDIX

A copy of the claims involved in the appeal is attached as Appendix A.

Respectfully submitted,

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Attachments:

- **Appendix A: Claims**

Appendix A: Pending claims

1-17. (Canceled)

18. (Previously Presented) A method of determining an accuracy of a gradient array in an optical tissue measurement comprising:

transmitting an image through the optical tissue;

determining local gradients of the array across the optical tissue from the transmitted image;

integrating along a closed integration path across a portion of the array; and

determining the accuracy of the gradient array based on the integration.

19. (Original) The method of claim 18, further comprising:

calculating a change in elevation along the closed integration path across the portion of the array.

20. (Original) The method of claim 18 wherein, the closed integration path comprises:

a common starting point, a common ending point, a first integration path connecting the common starting point to the common ending point, and a second integration path connecting the common starting point to the common ending point, the first and second integration paths being different.

21-35. (Canceled)

36. (Previously Presented) The method of claim 18, further comprising transmitting a source image from a light source posteriorly through the optical tissues and onto the retina to define the image, wherein the image is transmitted posteriorly through a central region of the cornea, the central region having a size which is significantly less than a pupil size

of the eye, and wherein the image is transmitted from the retina anteriorly through the optical tissues.

37. (Previously Presented) The method of claim 36, wherein the image is transmitted by the optical tissues as a plurality of beamlets, wherein each gradient corresponds to an associated portion of an optical surface such that each beamlet is transmitted through the optical tissue according to the corresponding gradient.

38. (Previously Presented) The method of claim 18 wherein the integration is performed so as to map an error-correcting change in optical tissues.

39. (Previously Presented) The method of claim 38 wherein the mapping step comprises deriving a proposed change in the optical tissue surface elevations so as to effect a desired change in optical properties of the eye, and further comprising modifying the optical tissue surface according to the proposed change by laser ablation.

40. (Previously Presented) The method of claim 18, wherein the closed integration path extends from a first center of a first portion of the optical surface to a second center of a second portion of the optical surface, from the second center to a third center of a third portion of the optical surface, and from the third center back to the first center, the first, second and third portions of the optical surface corresponding to the first, second and third gradients of the gradient array, respectively.

41. (Previously Presented) The method of claim 18, wherein the closed integration path extends from an initial location corresponding to a position between a first gradient array element and a second gradient array element, the path crossing a first portion of the optical surface corresponding to the second gradient array element, a second portion of the optical surface corresponding to a third gradient array element, and a third portion of the optical surface corresponding to a fourth gradient array element before returning back to the initial location.

42. (Previously Presented) The method of claim 18, wherein an elevation map is generated directly in the mapping step without deriving coefficients of a series expansion mathematically approximating the optical surface.

43. (Withdrawn) A method of identifying an inaccuracy of a gradient array corresponding to an optical tissue, comprising:

inputting a gradient array corresponding to light transmitted through an optical tissue;

integrating along a first closed integration path on the gradient array to determine a first path integration, the first integration path comprising a common starting point and a common ending point;

integrating along a second closed integration path on the gradient array to determine a second path integration, the second path comprising the common starting point and the common ending point; and

identifying the inaccuracy of the gradient array by comparing the first path integration with the second path integration.

44. (Withdrawn) A method of identifying an inaccuracy of a gradient array corresponding to an optical tissue, comprising:

inputting a gradient array corresponding to light transmitted through the optical tissue;

integrating along a first closed integration path on the gradient array to determine a first path integration, the first integration path comprising a common starting point and a common ending point;

integrating along each of a set of additional closed integration paths on the gradient array to determine a corresponding set of additional path integrations, each of the additional closed integration paths comprising the common starting point and the common ending point; and

identifying the inaccuracy of the gradient array by comparing the first path integration with the set of additional path integrations.